

New Millennium EO3
Fuk K. Li
Jet Propulsion Laboratory
California Institute of Technology

The New Millennium Program (NMP) is a NASA technology program that focuses on the validation of advanced spacecraft and instrumentation technologies in space. This program specifically seeks technologies that could significantly benefit future space and Earth science missions by enabling new science capabilities and reducing life cycle costs. These technologies must also require a validation in space to mitigate risks to the first science users, and provide cross-cutting benefits to both NASA's Earth and Space Science enterprises.

The NASA Office of Earth Science (OES) directed the NMP to focus the third Earth Observing mission, EO3, on innovative measurement concepts that would facilitate remote sensing observations from orbits beyond conventional low-Earth orbit (LEO). These orbits include geosynchronous orbits, highly elliptical orbits, mid-Earth and high-Earth orbits, and other unique vantage points such as L1 and L2. To maximize the input from the Earth science community, a NASA Research Announcement (NRA) was released to solicit innovative measurement concepts for this NMP flight. Because the NMP is a technology validation program, rather than a conventional science program, the NRA required that these measurement concepts employ revolutionary technologies and/or measurement strategies that will enable future science missions from orbits beyond LEO. Another requirement was that a validation in space was needed to reduce real or perceived risks of this concept to future science users. The proposals submitted in response to this NRA were peer reviewed by the NASA OES. The measurement concepts selected through this process will be summarized in this presentation.

The EO3 measurement concept NRA did not solicit complete mission concepts or flight hardware. Instead, the selected investigators will join integrated project formulation teams to define the mission for the demonstration of the measurement technique and participate in mission design trades and implementation planning. The teams will define and document the measurement approach, the required technologies, the validation plan, the scalability of the design to future science missions, and the infusion path for the completely validated instrument. During this project formulation phase, the specific technologies required to implement each measurement concept will be solicited through an open technology solicitation, and the technology providers will be added to the integrated teams. Once a complete candidate mission concept has been formulated for each measurement concept, these concepts will be subjected to a comprehensive review. The Associate Administrator of the OES will use the results of this review to select a single concept for the EO3 flight opportunity. That mission concept will enter its implementation phase, which is expected to last for less than 36 months before launch. During this phase, and after launch, the implementation team will work with the NMP to document and disseminate the information gathered during the flight qualification testing and operations of the measurement concept and its component technologies. This information will be archived and published, where appropriate, to encourage the rapid infusion of these validated technologies into future space and Earth science missions.